



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/626,981	07/27/2000	Douglas Melton Carper	13DV13683	2688

6111 7590 12/03/2002

GENERAL ELECTRIC COMPANY  
ANDREW C HESS  
GE AIRCRAFT ENGINES  
ONE NEUMANN WAY M/D H17  
CINCINNATI, OH 452156301

EXAMINER
----------

NGUYEN, KIMBERLY T

ART UNIT	PAPER NUMBER
----------	--------------

1774

DATE MAILED: 12/03/2002

16

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/626,981	<b>Applicant(s)</b> CARPER, DOUGLAS MELTON	
	<b>Examiner</b> Kimberly T. Nguyen	<b>Art Unit</b> 1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 September 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 and 35-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 35-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \*   c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Amendment***

This action is in response to the amendment submitted on June 24, 2002. New claims 35-38 are acknowledged.

### ***Claim Rejections - 35 USC § 112***

Due to Applicant's remarks, the previous rejections of claims 1 and 13 are withdrawn.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 1, 13, and 35-38** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1 and 13, it is not clear whether the "plurality of discrete regions" include the "first region" and the "second region" or whether they are separate and distinct from the first and second regions.

The term "substantially" in the phrase "regions each extending substantially completely" in claims 1, 13, 35, and 37 is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

In claims 35 and 37, it is unclear how the second combination of reinforcing fibers are "different" from the first combination. Further, the term "different" in claims 35 and 37 is a relative term which renders the claim indefinite. The term "different" is not defined by the

Art Unit: 1774

claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

In claims 36 and 38, it is not clear what is meant by the phrase “a plurality of the fabric providing the first and second stacks” when Applicants already show that the first and second combination are “included in a pattern repeated in a fabric.”

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1, 2, 4, 6, 8-10, 13-14, 16, 18, and 35-38** are rejected under 35 U.S.C. 102(b) as being anticipated by Parthasarathy et al., U.S. Pat. No. 6,251,815 B1.

Parthasarathy shows a thermal gradient resistant ceramic composite (member) used in exhaust components in jet and rocket engines comprising a ceramic alumina and silica matrix (column 1, lines 36-41 and column 2, lines 64-67 and claim 4) and mats or stacks (patterned fibers in fabrics, weaves) of fibers comprising Nextel 610 and Nextel 720 (alumina and alumionsilicate fibers) (column 1, lines 37-40 and column 2, lines 60-63). Parthasarathy further shows that different fiber types which have different coefficients of thermal expansion are used in selected regions of the composite structure such that the stresses resulting from differences in their thermal expansivity are opposite the stresses imposed by differences in temperature during use (column 4, lines 16-45). In addition, Parthasarathy shows that the fibers in a hot region 222 (first region with first combination of fibers) should have a lower coefficient of thermal

Art Unit: 1774

expansion than fibers in the cool region 224 (second region with second combination of fibers) (column 4, lines 45-51 and Figures 3-4) and thus, are different from each other. Parthasarathy shows that the hot and cool regions (discrete regions) comprise fibers and matrix materials in the regions (stacks) and thus, the fiber stacks extend from surface to surface (completely through the first and second regions) (column 2, lines 7-20).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 3, 5, 7, 11-12, 15, and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Parthasarathy et al., U.S. Pat. No. 6,251,815 B1.

Parthasarathy is relied upon as above for claims 1 and 13.

Although Parthasarathy does not specifically show that the ceramic composite has the relationship as in instant claims 3 and 15, the invention of Parthasarathy has the same components of the matrix and reinforcing fibers as in the instant invention. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make such a composite with the same relationship and it would have been obvious that the invention of Parthasarathy would have the relationship of instant claims 3 and 15 because it is known in the art to use specific fibers in an alumina matrix which would be expected to result in the relationship.

Art Unit: 1774

Though Parthasarathy shows first and second fibers are in a ratio of 90:10 (column 5, lines 12-26), Parthasarathy does not show that the fibers included in the ceramic composite are in the range of about 20-70 volume % as in instant claims 7, 11, and 12. Parthasarathy does not show the ranges of the first and second temperature ranges as in instant claims 5 and 17.

However, such ranges are properties which can be easily determined by one of ordinary skill in the art. With regard to the limitation of the range of volume percentage and temperature, absent a showing of unexpected results, it is obvious to modify the conditions of a composition because they are merely the result of routine experimentation. The experimental modification of prior art in order to optimize operation conditions (e.g. ranges) fails to render claims patentable in the absence of unexpected results. All of the aforementioned limitations are optimizable as they control the level of fiber reinforcement, stress, and strength of the composite. As such, they are optimizable. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the composite with the limitations of the volume percentage of fibers and ranges of temperatures of the first and second regions since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Parthasarathy shows that those skilled in the art would recognize that the hot and cool sides (regions) are relative terms which indicate a temperature differential between the two sides (column 3, lines 31-45) and that the ceramic composite of Parthasarathy is used in combustion and exhaust components in jet and rocket engines; however, Parthasarathy does not show that the sides “experience” the range of first and second temperatures as in instant claims 5 and 17. It would have been obvious to one having ordinary skill in the art at the time the invention was

Art Unit: 1774

made that the hot and cool sides (regions) of the ceramic composite of Parthasarathy could “experience” the temperatures as in instant claims 5 and 17 because the hot and cool sides are the same components of the instant invention. Additionally, Parthasarathy uses the same fibers Nextel (610 and 720) that Applicant uses so discovering these same temperature ranges would be within the skill of the ordinary artisan.

Further, the limitations as shown in claims 1 and 13 (of which claims 5 and 17 depend upon, respectively) of “the article...subjected ...to a plurality of operating temperatures and stresses” introduces process limitations to the product claims. The patentability of a product does not depend on its method of production. Such process limitations are given little patentable weight in the product claims.

### ***Response to Arguments***

Applicants' argument filed June 24, 2002 have been fully considered but they are not persuasive.

On pages 5-6, Applicants argue that the meaning of the term “region” in Parthasarathy is different than the meaning as in the instant invention. Applicants argue that Parthasarathy shows that the regions are portions extending inwardly from an article surface for a distance but not completely through the article from a cool region toward an opposing hot region. Applicants argue that Parthasarathy is different from the instant invention since the instant invention provides a single region between opposing surfaces, each substantially in the same temperature range, as shown in Figure 4 such that the regions are similar to contiguous, adjoined members of a jig-saw puzzle. Examiner is not persuaded because the instant invention, as shown in Figures 1, 2, and 4, show that the regions extend inwardly from an article surface for a distance but not

Art Unit: 1774

completely through the article. For example, Figure 1 shows that regions 12 and 14 do not completely extend through the article but are separate regions. Figure 2 shows that regions 16 and 18 do not extend completely through the article but are separate regions. Figure 4 shows that the regions 22, 24, 26, and 28 are separate and do not extend completely between and through the cool and hot regions to the article surface but are separate regions. Parthasarathy shows the same feature where the regions 222, 232, and 224 in Figure 4 are separate regions. Each of the regions 222, 232, and 224 are single regions extending between opposing front and back surfaces of the composite with different levels of coefficients of thermal expansion as in the instant invention. Thus, the regions of Parthasarathy do extend completely between and through the cool and hot regions to the article surface as in the instant invention and that the regions as shown in Figure 4 are similar to contiguous, adjoined members to a jig-saw puzzle.

Further, Applicants' argument that Parthasarathy is provided to accomplish a different purpose than the instant invention is not persuasive because a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. It does not matter what the intended use is in an article claim. The invention of Parthasarathy shows Applicants' invention without any structural differences. Thus, such a combination would be capable of accomplishing the same purpose and intended use as in the instant invention. The prior art structure of Parthasarathy thus meets the claims of Applicant's disclosure.

On page 6, Applicants argue that Parthasarathy does not show the interrelationships between regions as shown in instant claims 3 and 15, nor the volume range for fibers in a region



Art Unit: 1774

to provide desired structural stress as in instant claims 7, 11, and 12. Applicants argue that the regions of Parthasarathy are of a different kind and for a different purpose. Applicants arguments are not persuasive because Parthasarathy shows the same level of coefficient of thermal expansion (CTE) in the hot and cold regions and the same *components* of the fibers in an alumina matrix as in the instant invention and because Parthasarathy shows various amounts of the fibers. It would be obvious to the skilled artisan that the invention of Parthasarathy would satisfy the relationship as in instant claims 3 and 15. Further, the volume range of fibers, area ratios, elastic modulus, CTEs, operating temperatures, and strengths as shown in the relationship are all optimizable features which can be easily determined by one of ordinary skill in the art. With regard to the limitation of the ranges and/or values in the relationship, absent a showing of unexpected results, it is obvious to modify the conditions of a composition because they are merely the result of routine experimentation. The experimental modification of prior art in order to optimize operation conditions (e.g. ranges) fails to render claims patentable in the absence of unexpected results. All of the aforementioned limitations are optimizable as they control the strength, stresses, and fiber reinforcement of the regions of the composite. As such, they are optimizable. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the composite with the parameters which would satisfy the relationship and volume range of fibers since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

On page 7, Applicants argue that Parthasarathy does not discuss, suggest, or imply the embodiments of the newly added dependent claims. This argument is not persuasive because, as

Art Unit: 1774

discussed above, Parthasarathy shows that the composite comprises a ceramic alumina and silica matrix (column 1, lines 36-41 and column 2, lines 64-67 and claim 4) and mats or stacks (patterned fibers in fabrics, weaves) of fibers in different regions. Parthasarathy shows different fiber types with different coefficients of thermal expansion are used in the regions of the composite. In addition, Parthasarathy shows that the fibers in a hot region 222 (first region with first combination of fibers) should have a lower coefficient of thermal expansion than fibers in the cool region 224 (second region with second combination of fibers) (column 4, lines 45-51 and Figures 3-4) and thus, are different from each other. Parthasarathy shows that the hot and cool regions (discrete regions) comprise fibers and matrix materials in the regions (stacks) and thus, the fiber stacks extend from surface to surface (completely through the first and second regions) (column 2, lines 7-20).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly T. Nguyen whose telephone number is (703) 308-8176. The examiner can normally be reached on Monday to Friday, except on every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on (703) 308-0449. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

CYNTHIA H. KELLY  
SUPERVISOR, PATENT EXAMINER  
TECHNOLOGY CENTER 1100  
